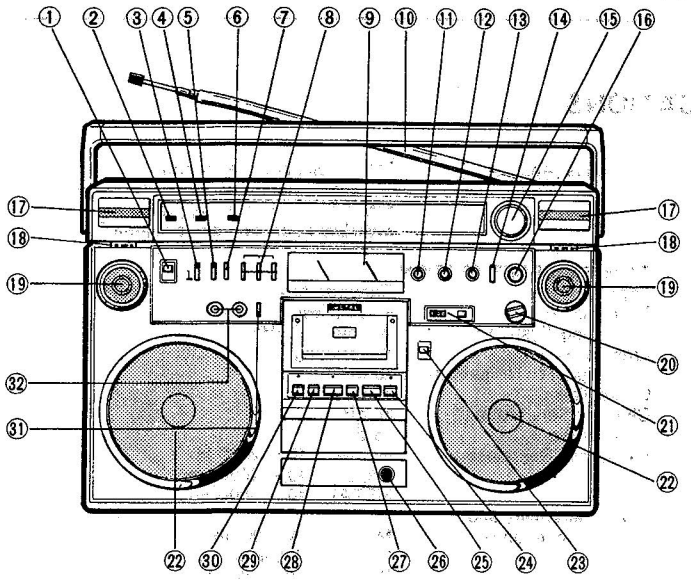
HITACHI

SERVICE MANUAL

TK	No. 1599E

TRK-8600E, E(BS)



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KEY TO ILLUSTRATIONS

① FUNCTION SELECTOR
② OPERATION INDICATOR (E)
AC POWER INDICATOR [E(BS)]
③ METER SELECTOR
④ DOLBY NR INDICATOR
⑤ MODE SWITCH
⑥ FM STEREO INDICATOR
⑦ DOLBY NR SWITCH
⑧ TAPE SELECT SWITCHES
⑨ METERS (LEVEL, TUNE/BATT.)
⑩ TELESCOPIC ANTENNA (AERIAL)
⑪ BALANCE CONTROL
⑫ BASS CONTROL
⑬ TREBLE CONTROL
⑭ LOUDNESS SWITCH
⑮ TUNING CONTROL
⑯ VOLUME CONTROL
⑰ TWEETERS
⑱ BUILT-IN MICROPHONES
⑲ MID-RANGE SPEAKERS
⑳ BAND SELECTOR
㉑ TAPE COUNTER
㉒ WOOFERS
㉓ EJECT BUTTON
㉔ PAUSE BUTTON
㉕ STOP BUTTON
㉖ HEADPHONE SOCKET
㉗ FAST FORWARD BUTTON
㉘ PLAYBACK BUTTON
㉙ REWIND BUTTON
㉚ RECORD BUTTON
㉛ RECORDING MODE SELECTOR
㉜ RECORDING LEVEL CONTROLS

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

CASSETTE TAPE RECORDER WITH FM/SW/MW/LW RADIO

Sept. 1981 **TOKAI WORKS** 908

SAFETY PRECAUTION

The following precautions should be observed when servicing.

1. Since many parts in the unit have special safety-related characteristics, always use genuine Hitachi's replacement parts. Especially critical parts in the power circuit block should not be replaced with other makes. Critical parts are marked with ⚠ in the schematic diagram, and circuit board diagram.
2. Before returning a repaired unit to the customer, the service technician must thoroughly test the unit to ascertain that it is completely safe to operate without danger of electrical shock.

SPECIFICATIONS

GENERAL SECTION

Semi-conductors :	IC's : 10 Transistors : 27 Diodes : 32 LED's : 6 Varicap : 1
Power (Mains) Supply :	AC : 220V, 50 Hz(E) AC : 240V, 50 Hz[E(BS)] DC : 15V (IEC R20×10) Car : Use car battery cord
Power Consumption :	30W
Dimensions :	551(W)×340(H)×177(D)mm
Weight :	8.5kg (with batteries)
Power output :	20W M.P.O (AC operation), 7.5W/CH (THD 10%)
Speakers :	16cm, 2.8 ohms×2 5cm, 4 ohms×2 3cm, 3k ohms×2

TUNER SECTION

Circuit System :	FM/SW/MW/LW 4-band superheterodyne
Tuning Range :	FM : 87.5 to 108 MHz SW : 6.0 to 18 MHz MW : 530 to 1605 kHz LW : 150 to 350 kHz
Sensitivity :	FM : 10 dB(pra.) 0 dB(max.) SW : 25 dB(pra.) 20 dB(max.) MW : 45 dB(pra.) 35 dB(max.) LW : 55 dB(pra.) 42 dB(max.)
Intermediate Frequency :	FM : 10.7 MHz SW/MW/LW : 468 kHz
Antennas (Aerials) :	FM : Telescopic antenna or External antenna SW : Telescopic antenna MW/LW : Ferrite-core antenna

TAPE RECORDER SECTION

Tape :	Cassette tape
Tape Speed :	4.75cm/sec.
Recording System :	AC bias, 57 kHz
Erasing System :	AC erasing
S/N (Signal to Noise Ratio) :	50 dB
Cross Talk :	70 dB
Channel Separation :	35 dB
Erase Ratio :	65 dB
Frequency Response :	Normal : 40~12000 Hz CrO_2 : 40~14000 Hz METAL : 40~16000 Hz
Input Sensitivity and Impedance :	Mic. : 1.5mV, 500 ohms Din : 10mV, 20k ohms Phono : 3mV, 50k ohms
Output Level and Impedance :	Din : 700mV, 5k ohms Headphone : 56 ohms Ext. speaker : 2.8~4 ohms
Fast Forward or Rewinding Time :	120 sec (Using C-60)
Distortion :	3%
Motor :	DC micromotor
Wow and Flutter :	0.05% (WRMS)

DISASSEMBLY

1. Function button assembly

Press the function button assembly in the direction of the arrow to remove the stopper, and then remove the function button assembly toward the front.

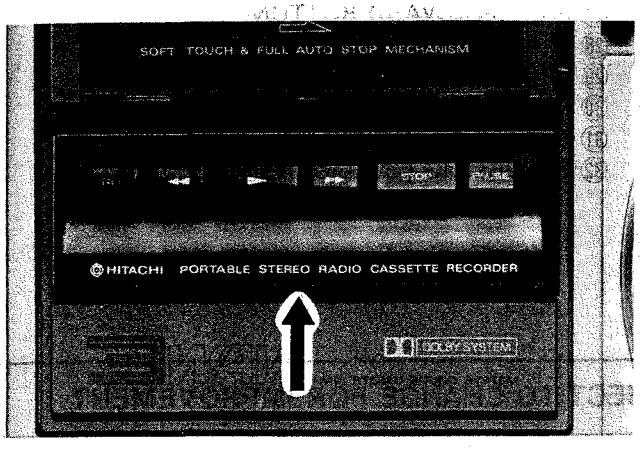


Fig. 1

2. Cassette lid

Remove the function button assembly, open the cassette lid and press the installation section in the direction of the arrow to remove the cassette lid. When installing the cassette lid, install the cassette lid as shown in Fig. 2. Press the eject button to push up the eject slider and then gradually close the cassette lid. Be careful, when the eject slider is not completely pushed up, it causes damage to the eject slider and the cassette lid.

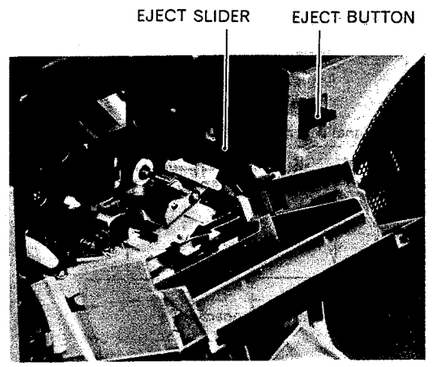


Fig. 2

5. **Cassette chassis :** Fixing screws Ⓐ (4)
   Level meter : Fixing screws Ⓑ (2)
   Control P.C. Board : Fixing screws Ⓒ (4), and stopper
   Phono amp, Dolby NR P.C. Board : Fixing screws Ⓓ (4)
   Sub. chassis : Fixing screws Ⓔ (2)

3. **Antenna**
   Remove the "ROD ANT FIXING SCREW" shown in Fig. 3.

4. **Rear case**
   Remove nine rear case fixing screws shown in Fig. 3.

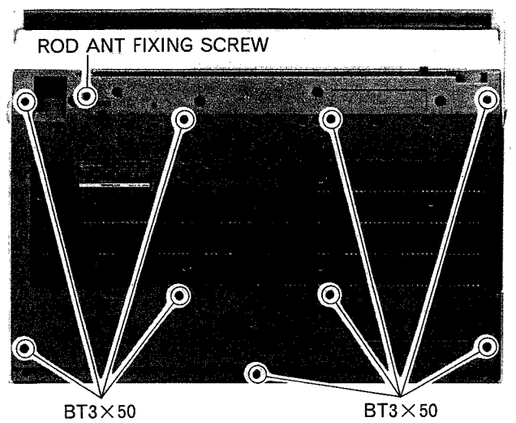


Fig. 3

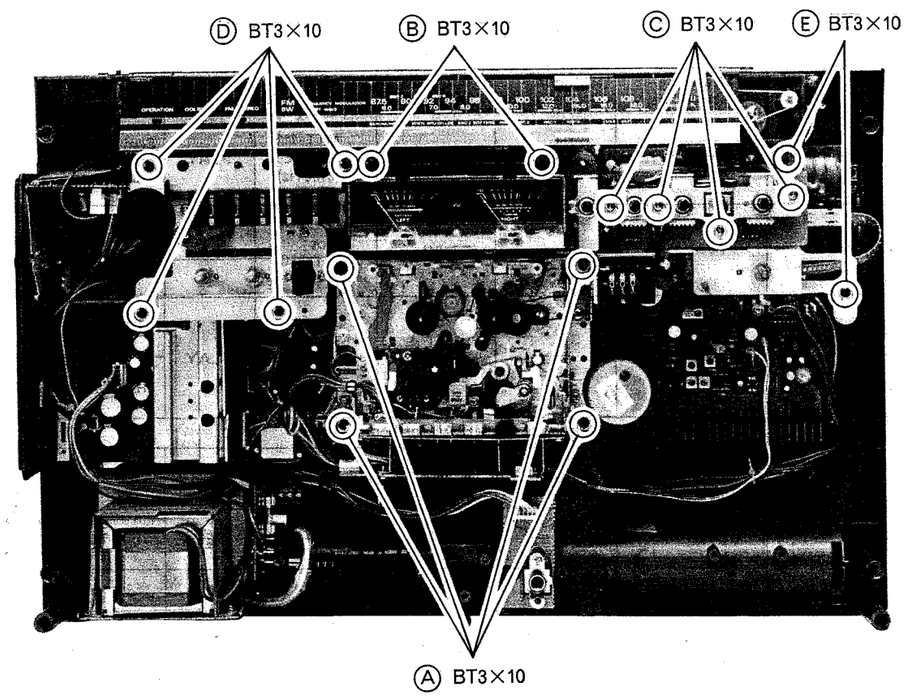


Fig. 4

6. **Tape/AF/Power P.C. Board :** Fixing screws Ⓕ (7)
   Tuner P.C. Board : Fixing screws Ⓖ (5)

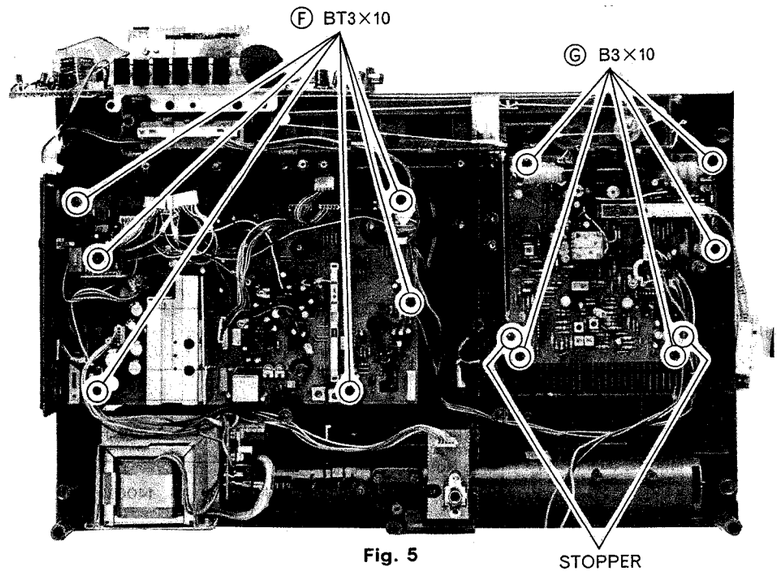


Fig. 5

ADJUSTMENT

TUNER

* For West Germany

Item		Adjustments	Measuring instrument & connection			Signal generator or genescope frequency	Dial pointer position	Adjust	Reading
			Measuring instrument	Input terminal	Output terminal				
	(1)	Turn the T202 fully counterclockwise							
1	(2)	FM - IF	• Genescope (10.7MHz)	TP101	TP201	10.7MHz	Highest	T101 T201	See Note 1
	(3)	S - Curve						T202	See Note 2
2	(1)	FM - OSC (Covering)	• FM Signal generator (400Hz, 30% mod.) • VTVM	P102 (See Note 3)	TP201	87 MHz (87.5 MHz*)	Lowest	L102	Output Max.
	(2)					109MHz (108 MHz*)	Highest	CT102	
	(3)		Repeat (1) and (2).						
3	(1)	FM - ANT (Tracking)	• FM Signal generator (400Hz, 30% mod.) • VTVM	P102 (See Note 3)	TP201	90MHz	90MHz	L101	Output Max.
	(2)					106MHz	106MHz	CT101	
	(3)		Repeat (1) and (2).						
4	(1)	FM-tuning meter	• Genescope (10.7MHz) • VTVM	TP101	TP203	10.7 MHz	Highest	T203	Output Max.
5	(1)	AM - IF	• Genescope (468 kHz)	Ferrite antenna (See Note 5)	TP202	468 kHz	Highest	T151 T204	See Note 4

Item		Adjustments	Measuring instrument & connection: Measuring instrument	Input terminal	Output terminal	Signal generator or genescope frequency	Dial pointer position	Adjust	Reading
6	(1)	SW -OSC (Covering)	• AM Signal generator (400Hz, 30% mod.) • VTVM	P102 (See Note 6)	TP202	5.8 MHz	Lowest	L154	Output Max.
	(2)					18.5 MHz	Highest	CT154	
	(3)		Repeat (1) and (2).						
7	(1)	SW -ANT (Tracking)	• AM Signal generator (400Hz, 30% mod.) • VTVM	P102 (See Note 6)	TP202	6.5 MHz	6.5 MHz	L151	Output Max.
	(2)					16 MHz	16 MHz	CT151	
	(3)		Repeat (1) and (2).						
8	(1)	MW-OSC (Covering)	• AM Signal generator (400Hz, 30% mod.) • VTVM	Ferrite antenna (See Note 5)	TP202	515 kHz	Lowest	L155	Output Max.
	(2)					1650 kHz	Highest	CT155	
	(3)		Repeat (1) and (2).						
9	(1)	MW-ANT (Tracking)	• AM Signal generator (400Hz, 30% mod.) • VTVM	Ferrite antenna (See Note 5)	TP202	600 kHz	600 kHz	L152	Output Max.
	(2)					1400 kHz	1400 kHz	CT152	
	(3)		Repeat (1) and (2).						
10	(1)	LW-OSC (Covering)	• AM Signal generator (400Hz, 30% mod.) • VTVM	Ferrite antenna (See Note 5)	TP202	145 kHz	Lowest	L156	Max.
	(2)					360 kHz	Highest	CT156	
	(3)		Repeat (1) and (2).						
11	(1)	LW-OSC (Tracking)	• AM Signal generator (400Hz, 30% mod.) • VTVM	Ferrite antenna (See Note 5)	TP202	160 kHz	160 kHz	L153	Max.
	(2)					330 kHz	330 kHz	CT153	
	(3)		Repeat (1) and (2).						
12	(1)	FM - Multiplex	• Frequency counter	See Note 7	P8	——	——	RT302	19 kHz±0.2 kHz
13	(1)	FM - Separation	• FM Stereo signal generator L+R (1KHz) : 180mV, 30% mod. Pilot (19KHz) : 20mV, 10% mod. • VTVM	P1 (See Note 3)	TP301, 302	98MHz	98MHz	RT301	See Note 8

Note :

1. Feed in a weak signal from the genescope. Adjust the T101, T201 for maximum gain and the waveform indicated in Figure A. If the center of the waveform cannot be lined up on the marker, adjust the rihgt/left balance.

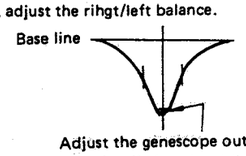


Fig. A

2. Use the T202 core to form the S-curve shown in Figure B. Adjust the symmetry of A and B about point C for linearity.

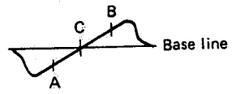


Fig. B

3. FM dummy antenna.

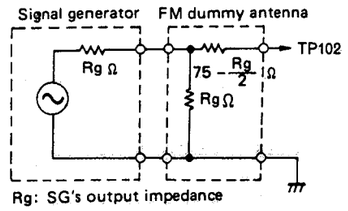


Fig. C

4. Feed in a weak signal from the genescope. Adjust the T151, T204 for maximum gain and the waveform indicated in Figure D. If the center of the waveform cannot be lined up on the marker, adjust the right/left balance.

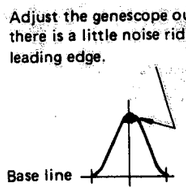


Fig. D

5. Connect AM signal generator to loop antenna, bring near to ferrite antenna.

6. SW dummy antenna.

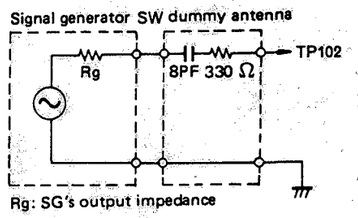


Fig. E

7. Connect a 10μF 25V electrolytic capacitor between the No.2 pin of IC301 and ground.

8. a. After feeding in of R channel and pilot signals, adjust RT301 for a minimum L channel output.
   b. Optimize RT301 so that the leak level of the L channel signal is equal to that of the R channel signal.

TAPE RECORDER

* Acording to DIN 45-500

Item		Adjustments	Measuring instrument & connection: Measuring instrument	Input terminal	Output terminal	Check tape	Mode	Adjust	Reading
1		Tape speed	• Frequency counter	——	TP401L, R	MTT-111 3000 Hz * (3150 Hz)	PLAY	Semi-variable resistor in the motor	3000 Hz $^{+90}_{-10}$ Hz (See Note 1)
2		Head azimuth	• VTVM	——	TP401L, R	MTT-316 or MTT-216, 12.5KHz	PLAY	Azimuth adjusting screw	Output Max. (See Note 2)
3		Playback gain	• VTVM	——	TP401L, R	MTT-150, 400Hz 200 nwb/m	PLAY	RT401L, R	0.775V (0 dBm)
4		Level meter						RT404L, R	See Note 3
5		Bias leakage	Set the tape selector switch to the METAL position.						
			• VTVM	——	TP402L, R	——	REC	L404L, R	Output Min.
6	(1)	Bias current	• VTVM	——	See Note 4	——	REC	RT403L, R	METAL : 6mV CrO_2 : 4.5mV NORMAL:3.5mV
	(2)		• Audio oscillator (1.25 kHz/12.5 kHz 0VU–20 dB) • VTVM • Attenuator	DIN IN	DIN OUT	Hitachi UD tape	REC/ PLAY	RT403L, R	See Note 6

Item	Adjustments	Measuring instrument & connection: Measuring instrument	Input terminal	Output terminal	Check tape	Mode	Adjust	Reading
		Set the tape selector switch to the normal position.						
7	Record/Playback output	• Audio oscillator (400Hz, 0dB) • VTVM	DIN IN	DIN OUT	Hitachi UD tape	REC/ PLAY	RT402L, R	+3dB±1dB (See Note 5)

Note :

1) Adjust within 30 sec. after heat-running for more than 20 minutes.
2) When the maximum values of both channels are different, tune to the maximum value of the L channel. In this case, the difference between the maximum values of both channels should be within 2 dB.
3) With the condition shown in item 3, (adjust RT404L, R so that the level meter indicates +3 dB. (indicated with mark ▯▯)
4) Connecting a resistor of 10Ω to the ground side of Record/ playback head, measure the both sides of the resistor.
5) a. Add 400 Hz signal with a level of 0 dB to DIN IN.
   b. With record mode, adjust REC volume (RV451L, R) so that TP401 L, R output becomes 0.775V (0 dBm).
   c. Adjust RT402L, R so that Record/Playback output becomes +3 dB (indicated with mark ▯▯)±1 dB.
6) a. Set the tape selector switch to the normal position.
   b. Feed a 1.25 kHz signal to the DIN IN in the recording mode and adust the audio oscillator output so that the Level meter indicate +3 dB.
   Then, adust the attenuator to lower the output level by 20 dB.
   c. Record the signal on UD tape with the conditions of item a, then continue to record with the audio oscillator frequency set to 12.5 kHz.
   d. Playback the recorded signal and adjust RT403L, R so that the output level difference between two frequencies is within ±2 dB measured at the DIN OUT.

LUBRICATION

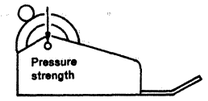
Lubricate one or two drops of oil to rotating point or lubricate grease to sliding point. Lubricate the respective parts listed below once every 1000 hours or once a year under normal conditions of use. Avoid oiling them excessively, or rotation may become irregular because of oil splashes.

Lubrication point		Oil or Grease
Rotary section	Metal and metal	Pan motor oil (10W-40)
	Mold and metal	Sonic slider oil (#1600)
Sliding section	Metal and metal	Hitasol (MO-138)
	Mold and mold Mold and metal	White grease (FL-LUBE-A)
Spring resonance prevention		Froil (GB-TS-1)

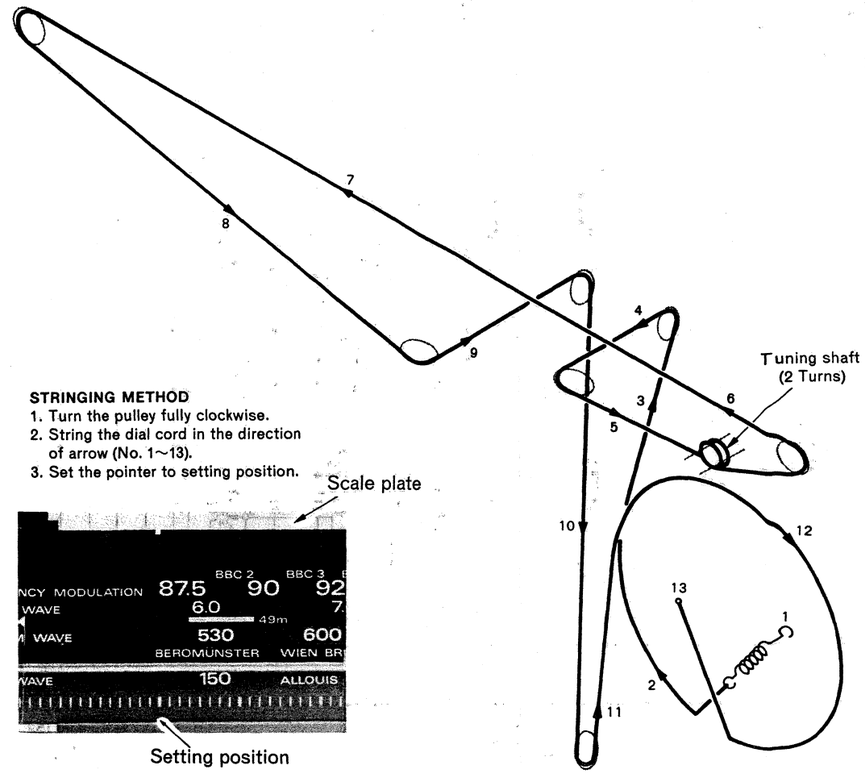
INSPECTION OF MECHANISM

Item No.	Inspection item	Reference value	Remarks
1	Pressure of pressure roller	350± 50g	Note 1
2	Take-up torque	33 ~65g·cm	
3	FF torque	70 ~120g·cm	
4	REW torque	70 ~120g·cm	
5	Supply side back-tension	1 ~ 3g·cm	Without counter
6	Take-up side back-tension	6g·cm or less	With counter
7	Brake force	10g·cm or more	
8	PLAY, REC, FF, REW, PAUSE, STOP, EJECT	0.5kg or less	
9	Flywheel thrust gap	0.05~0.5mm	

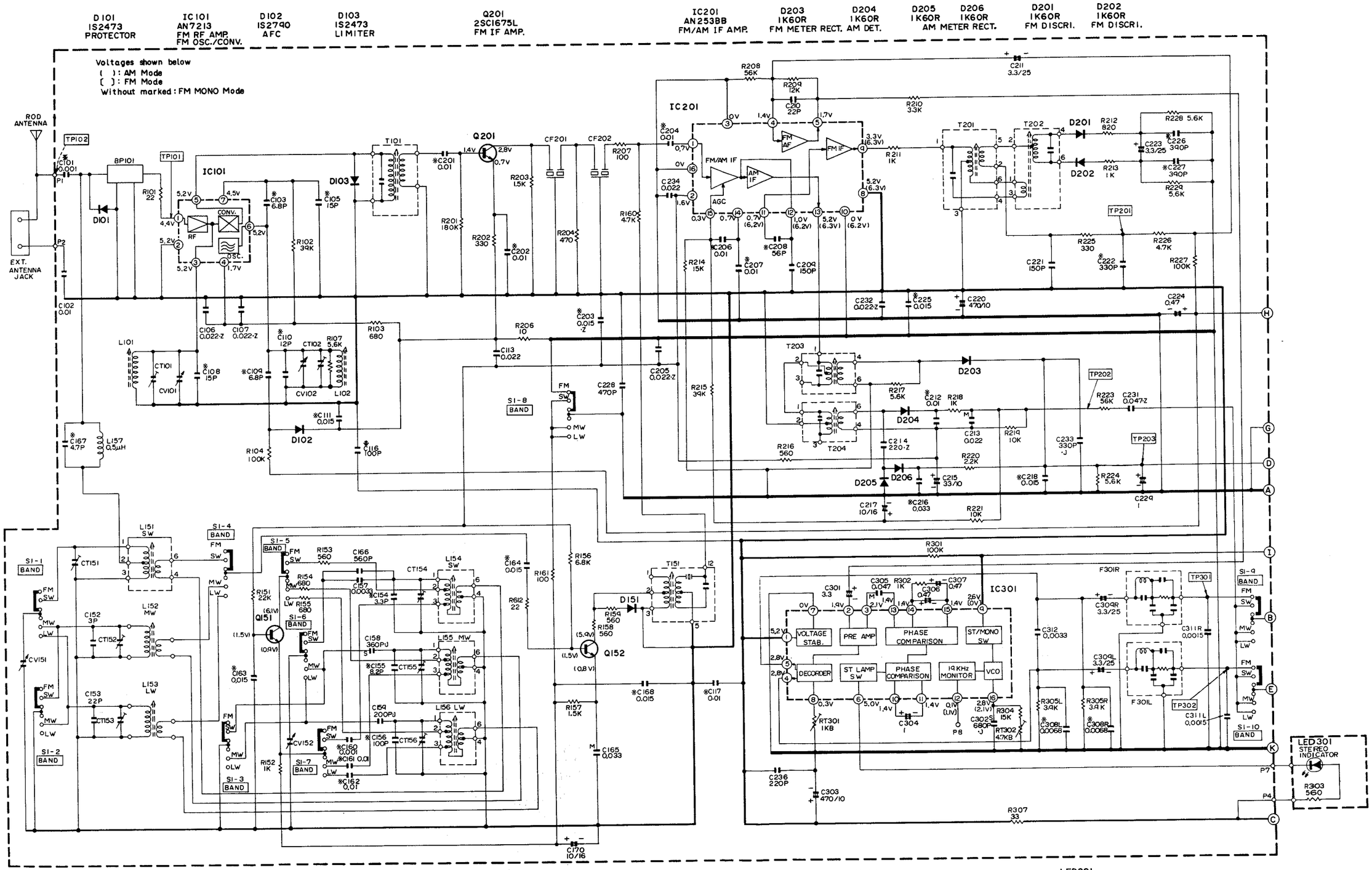
Note 1



DIAL CORD STRINGING



SCHEMATIC DIAGRAM



Q 151
2SC1675L
AM LOCAL OSC.

Q 152
2SC1675L
AM CONV.

D151
1K60R
AGC

IC301
BA1330
MPX

LED301
GL-9PR2
STEREO INDICATOR

Note

1. Voltage measured at base of chassis with minimum volume control and no signal.
2. Nomenclature of Resistors and Capacitors.

R101 150-RS·1·K-

	Circuit No.
Value	No indicated Ω(Ohm) M : 1000kΩ
Tolerance	No indicated ±5% K : ±10% M : ±20%
Wattage	No indicated ¼W
Sort	No indicated Carbon film RC : Composition RW : Wire wound RS : Oxide metal film RN : Fixed metal film

C101 0.001·M-

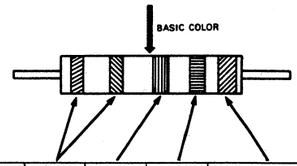
	Circuit No.	
Value	No indicated μF P : PF	
Tolerance	No indicated ±10% J : ± 5% M : ±20% Z : +80%, −20% D : ±0.5pF C : ±0.25pF	
Sort		Ceramic
		Electrolitic
		Mylar
		Polyester
		Styrol
Voltage	No indicated 50WV	

C102 0.1/16-

3. Be sure to make your orders of resistors and capacitors with value, voltage, tolerance and sort.
4. When replacing capacitors marked with ✻, use specified ones stated on parts list since required temperature characteristics.

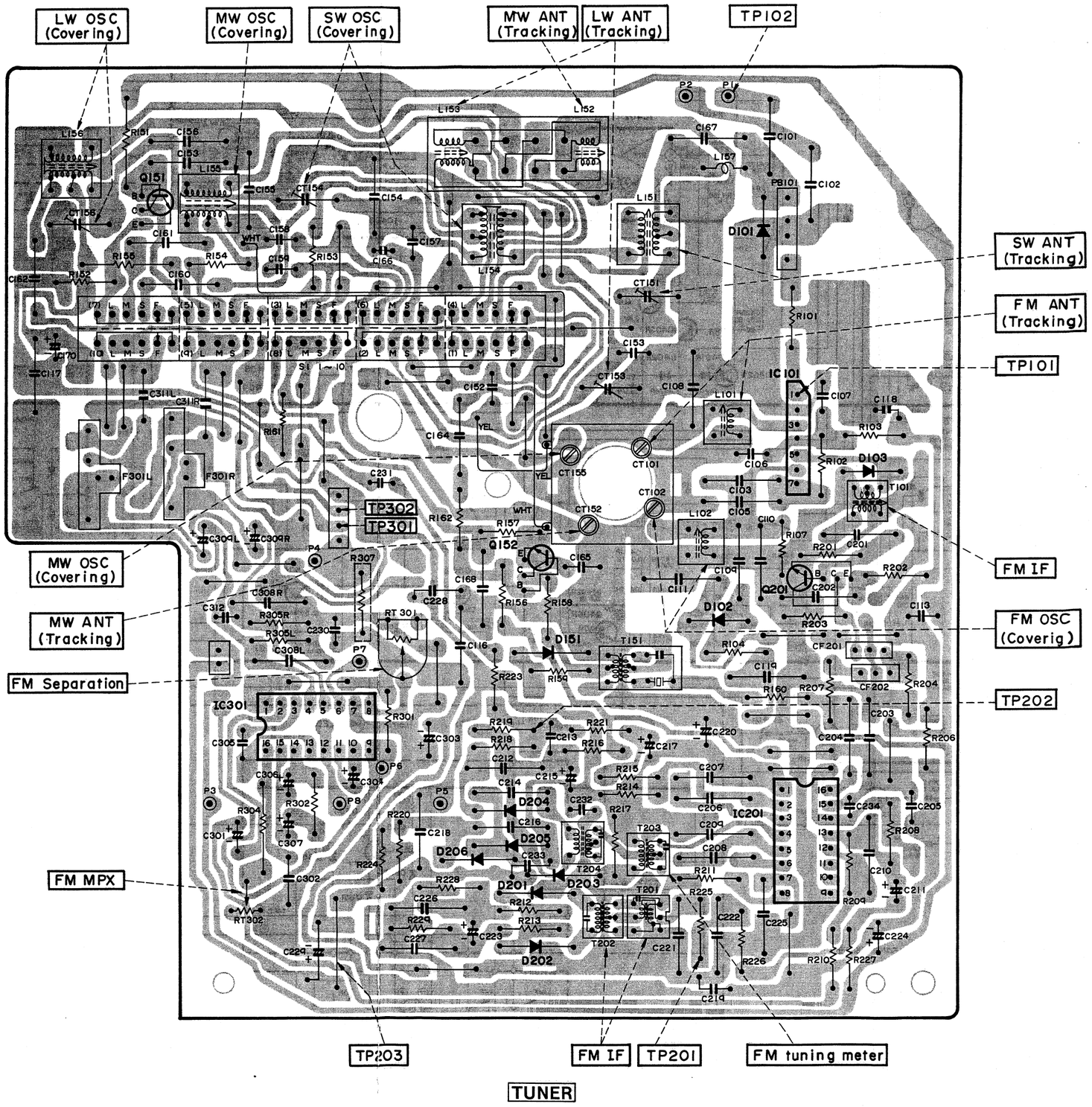
HOW TO READ CAPACITY OF RESISTOR SHAPE CAPACITORS

COLOR	RATED VOLTAGE
Pink	25V
Light green	50V

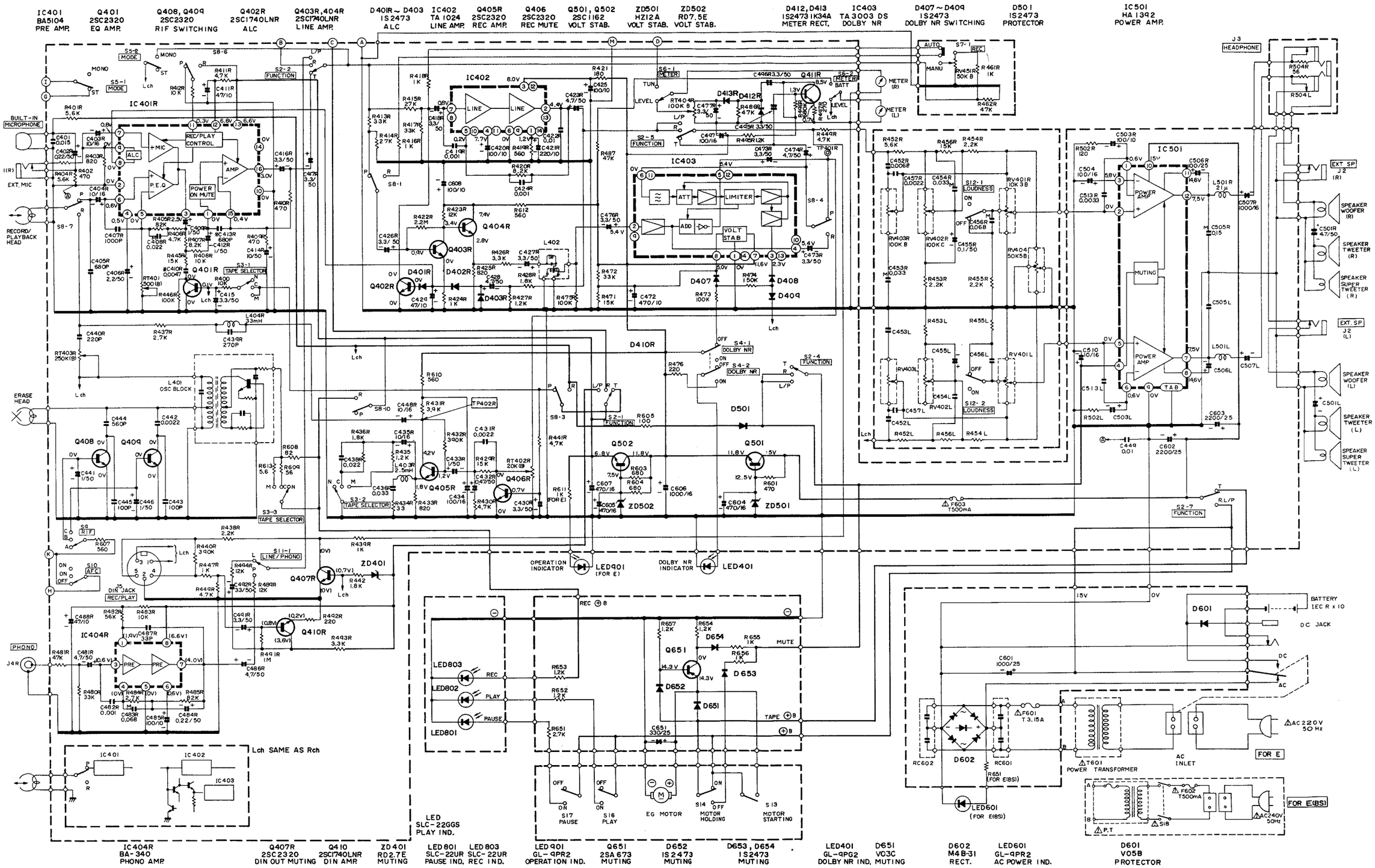


COLOR	CAPACITY	MULTIPLE	TOLERANCE	CHARACTERISTICS
Black	0	10^0	±20%	For temperature compensation
Brown	1	10^1		
Red	2	10^2		
Orange	3	10^3		
Yellow	4	10^4		
Green	5	10^5		
Blue	6			
Violet	7			
Grey	8		±30%	High dielectric constant type
White	9			For temperature compensation
Gold		10^{-1}	±5%	
Silver			±10%	High dielectric constant type

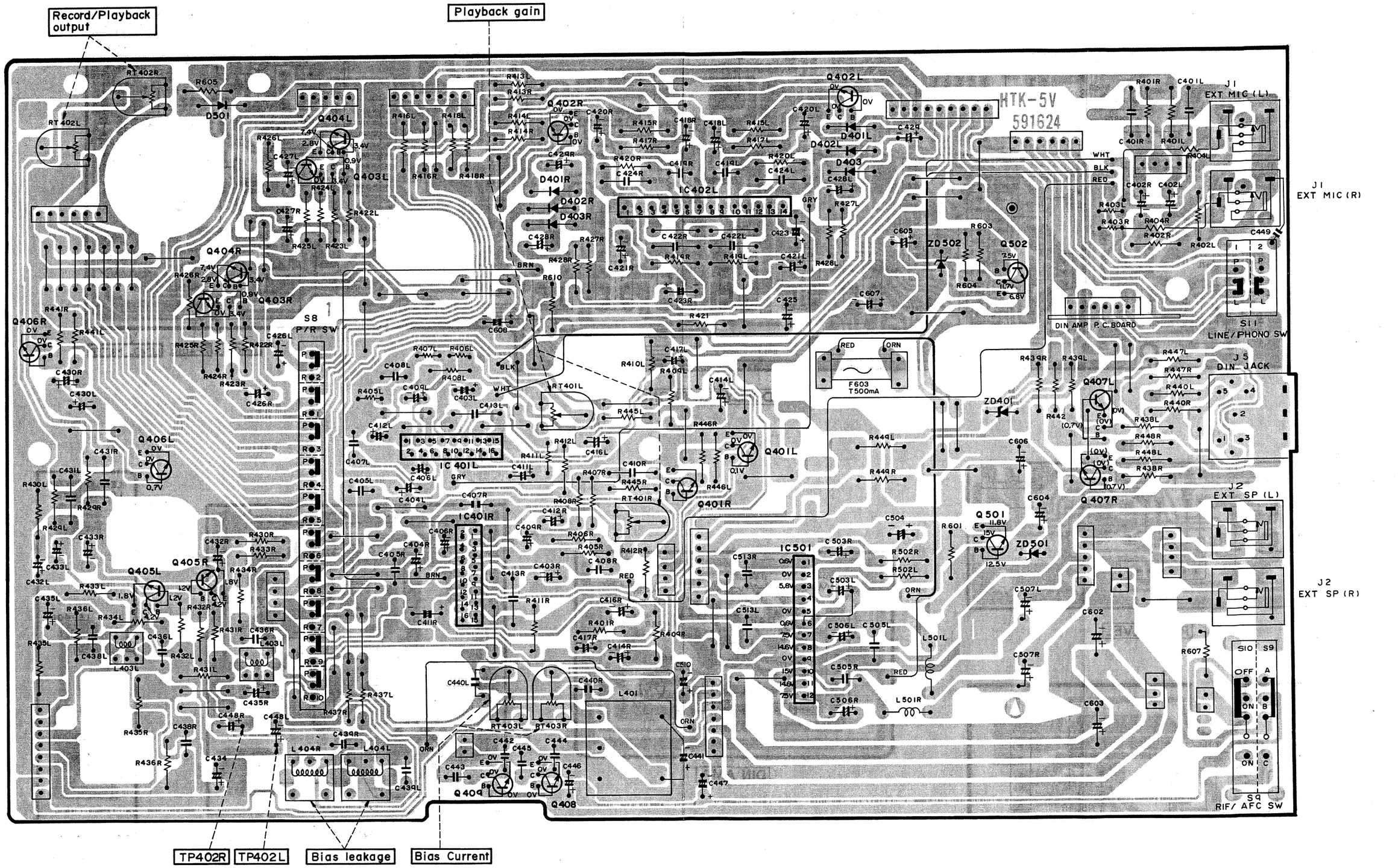
CIRCUIT BOARD DIAGRAM



SCHEMATIC DIAGRAM

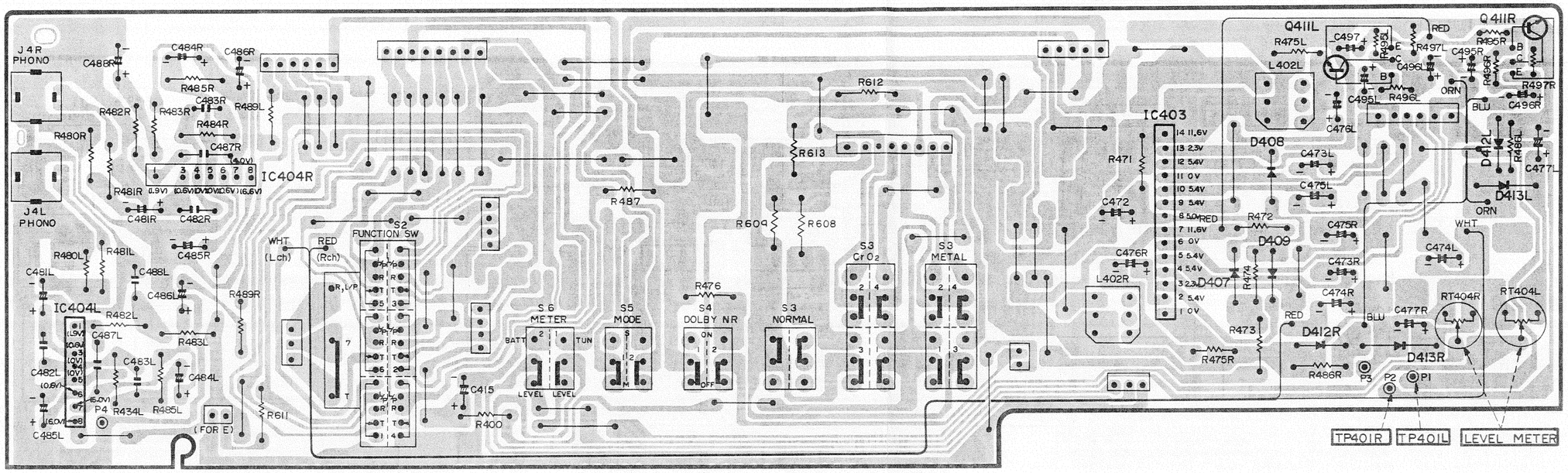


CIRCUIT BOARD DIAGRAM

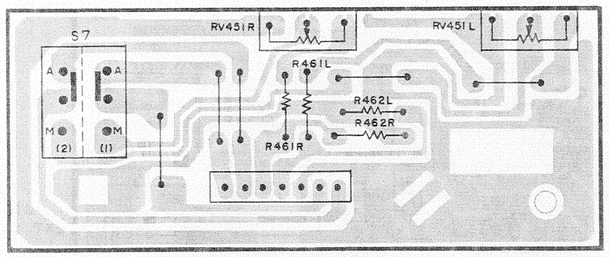


TAPE/AF/POWER

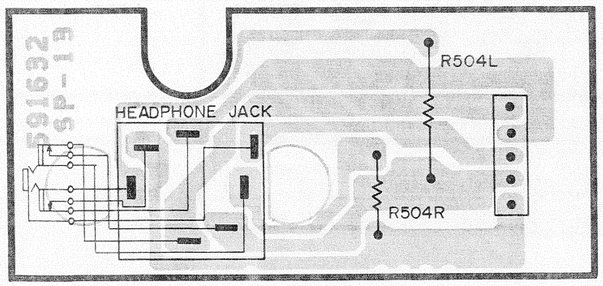
CIRCUIT BOARD DIAGRAM



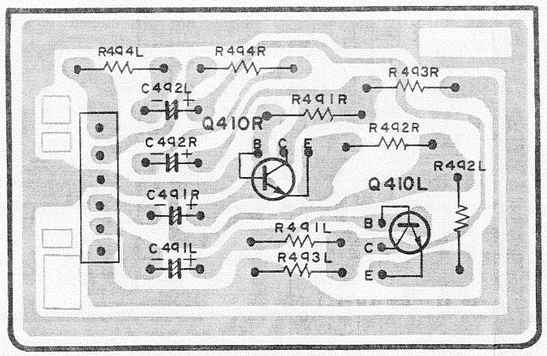
DOLBY NR, PHONO AMP.



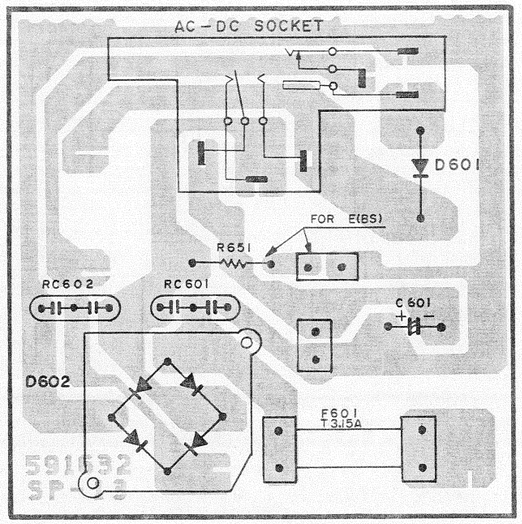
REC. LEVEL



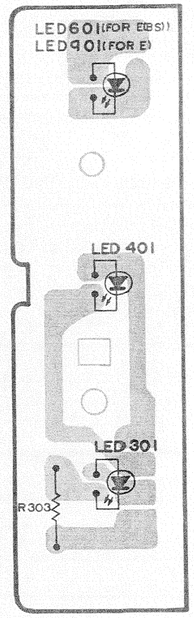
PHONES



DIN AMP.

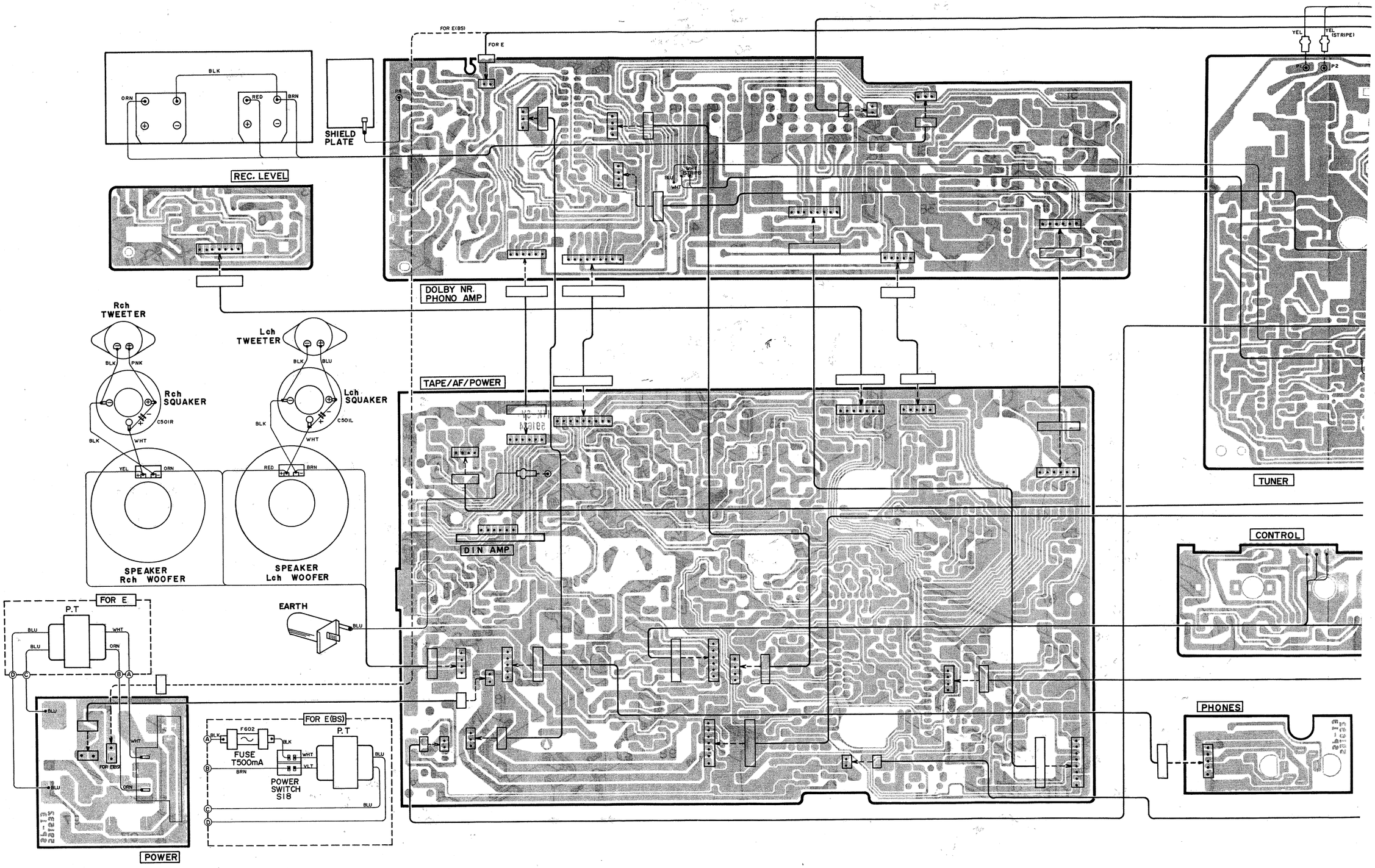


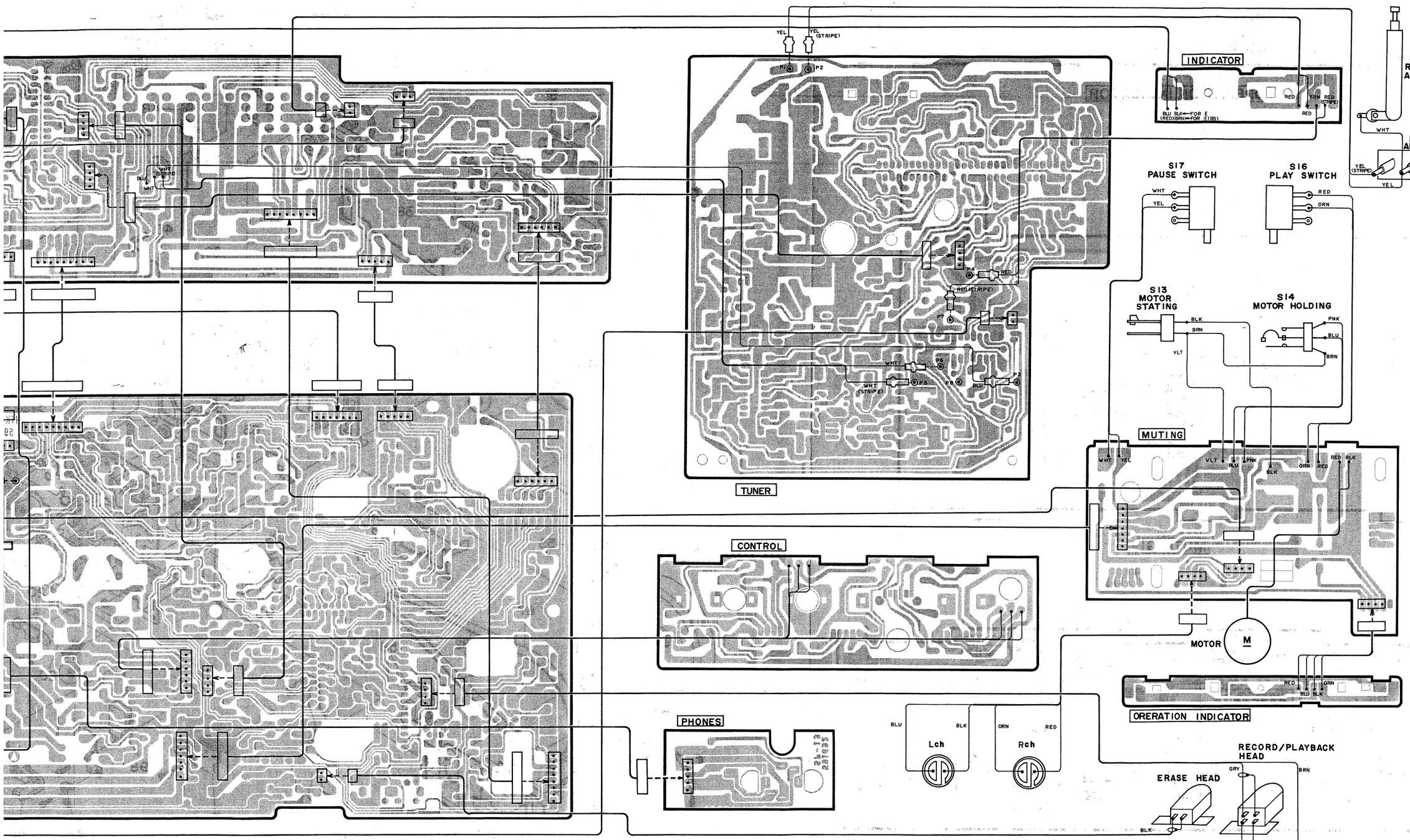
POWER



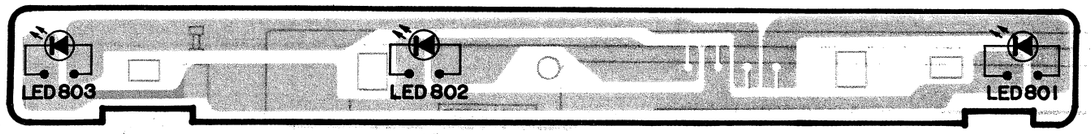
INDICATOR

WIRING DIAGRAM

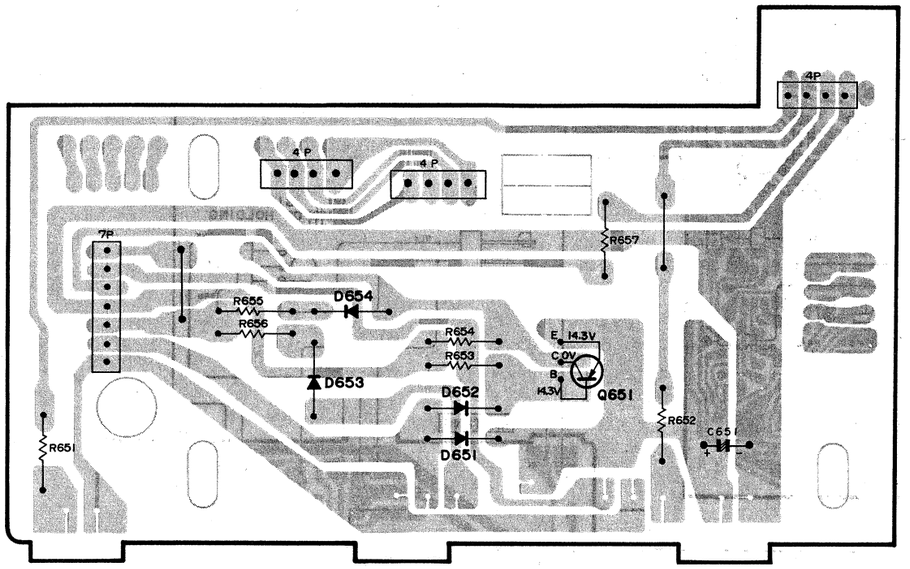



YEL
YEL (STRIPE)
P1
P2
INDICATOR
BLU BLK←FOR E
(RED)BRN←FOR E(BS)
RED
BRN
RED (STRIPE)
ROD ANTENNA
WHT
EXT. ANT. JACK
YEL (STRIPE)
FM
YEL
S17 PAUSE SWITCH
WHT
YEL
S16 PLAY SWITCH
RED
ORN
S13 MOTOR STATING
BLK
BRN
VLT
S14 MOTOR HOLDING
PNK
BLU
BRN
MUTING
WHT
YEL
VLT
BLU
PNK
BLK
ORN
RED
RED
BLK
MOTOR
M
ORERATION INDICATOR
RED
ORN
BLU
BLK
P4
RED
RED (STRIPE)
P7
WHT
P6
WHT (STRIPE)
P5
P8
BLU
P3
TUNER
CONTROL
PHONES
BLU
BLK
Lch
ORN
RED
Rch
RECORD/PLAYBACK HEAD
ERASE HEAD
GRY
BRN
BLK

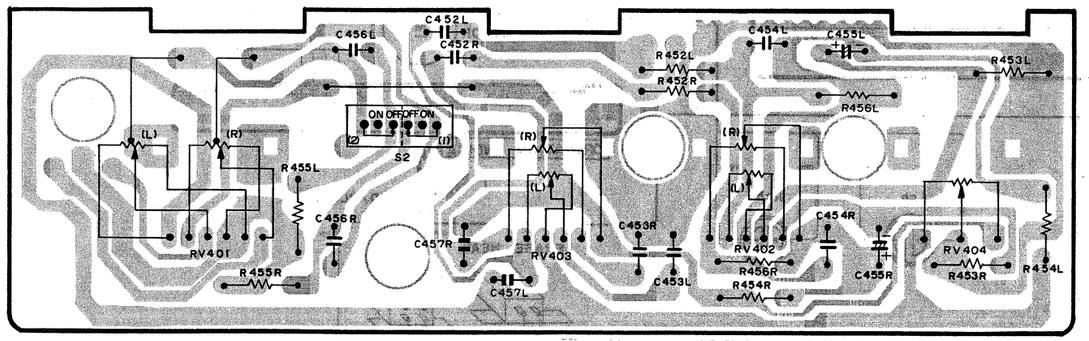
CIRCUIT BOARD DIAGRAM



OPERATION INDICATOR

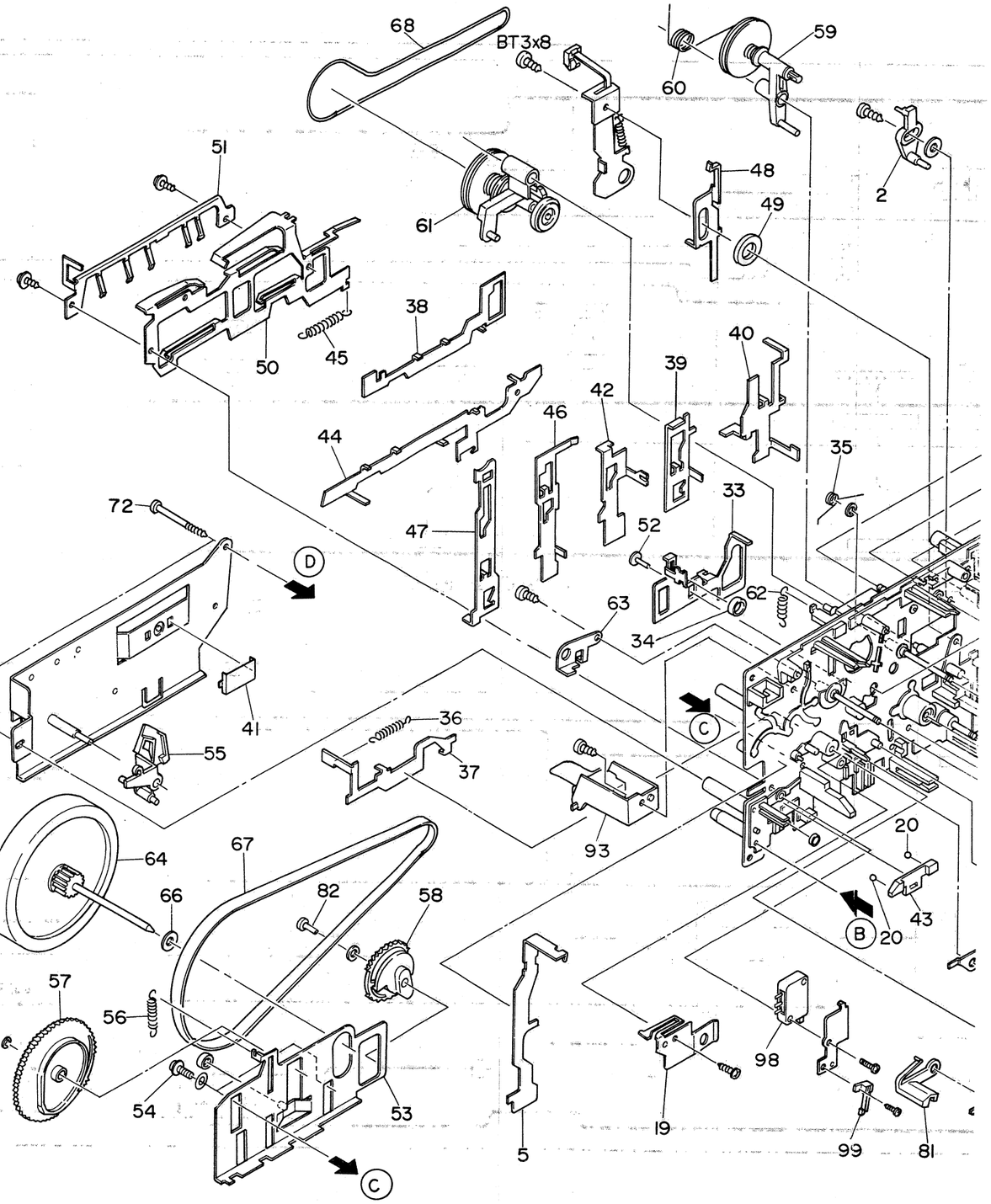


MUTING

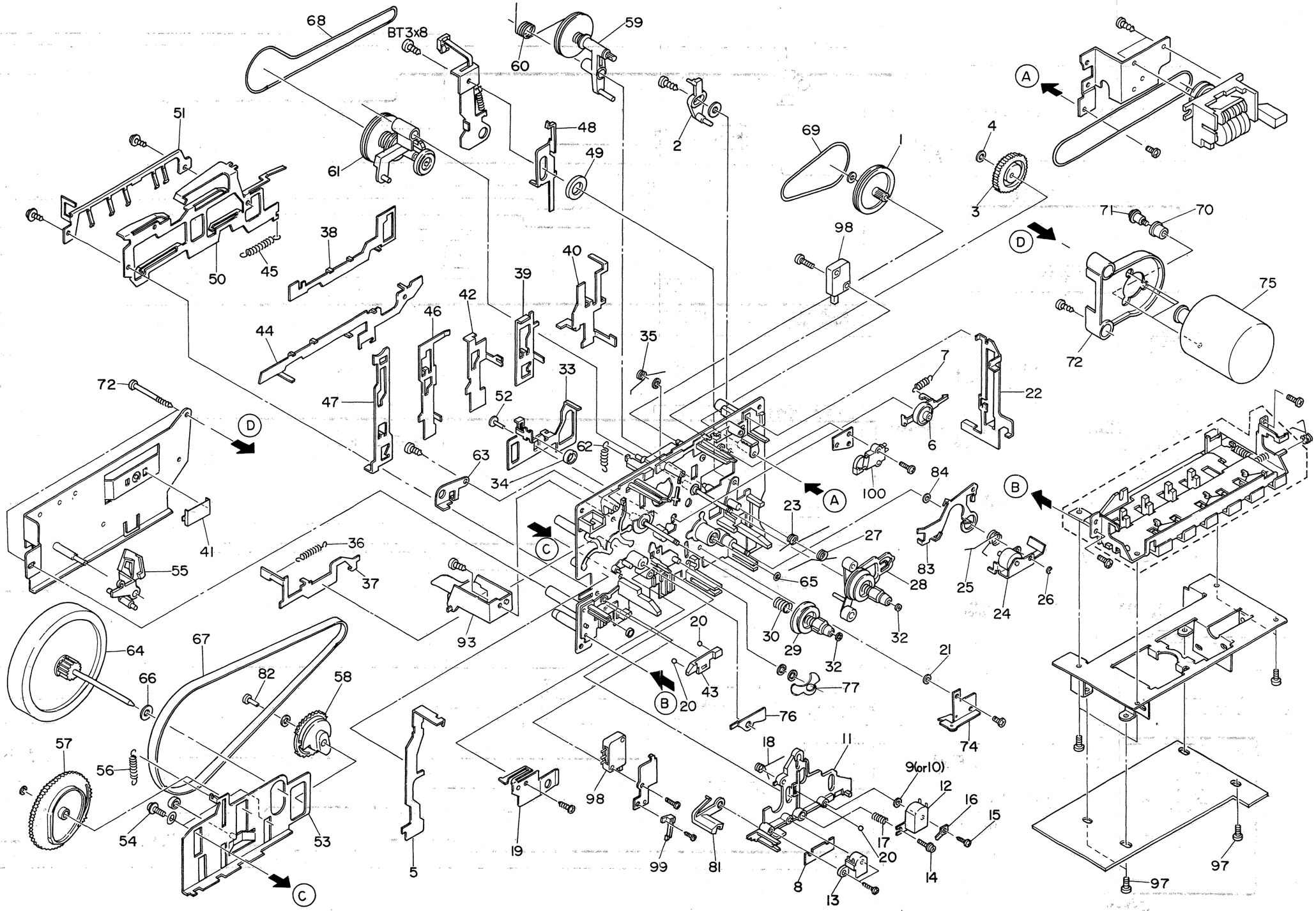


CONTROL

EXPLODED VIEW (Mechanism ML-2D)

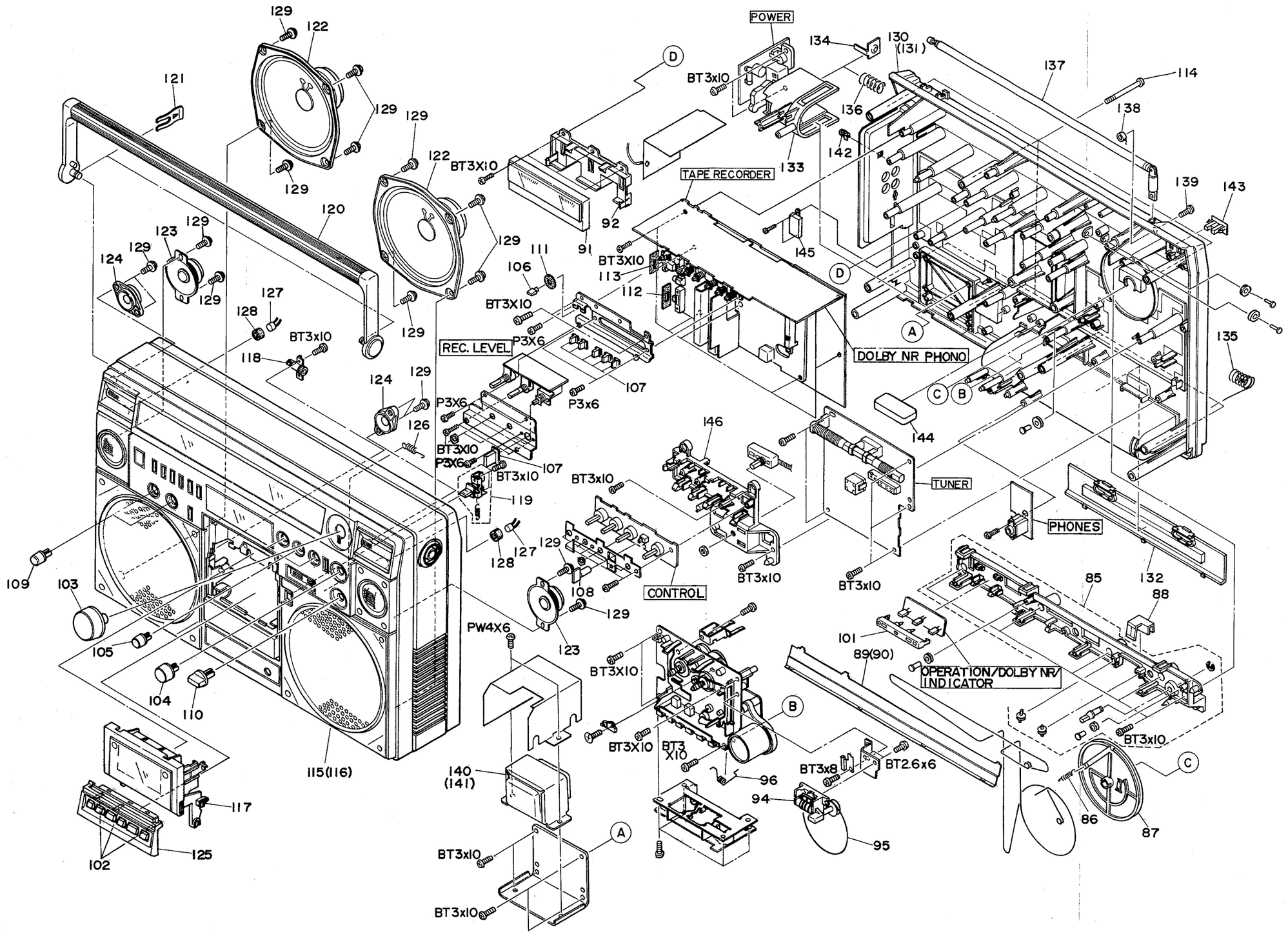


EXPLODED VIEW (Mechanism ML-2D)



Note : Components marked without numbers in this drawing are not specified as replacement parts.

EXPLODED VIEW (Cabinet)



REPLACEMENT PARTS LIST

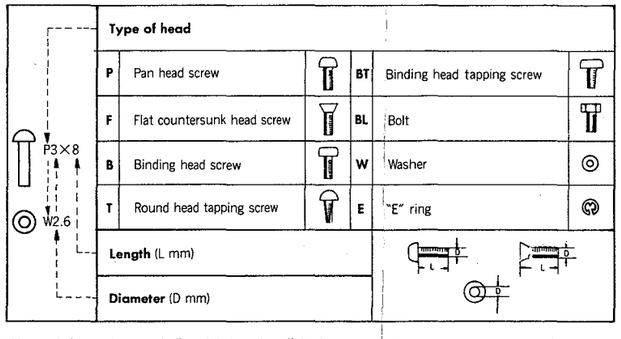
SYMBOL-NO	P-NO	DESCRIPTION
		CAPACITORS
CT101	5052391	VARIABLE CAPACITOR
CT102	5052391	VARIABLE CAPACITOR
CT151	5058191	TRIMMER 10PF
CT152	5052391	VARIABLE CAPACITOR
CT153	5058191	TRIMMER 10PF
CT154	5058191	TRIMMER 10PF
CT155	5052391	VARIABLE CAPACITOR
CT156	5058102	VARIABLE CAPACITOR
CV101	5052391	VARIABLE CAPACITOR
CV102	5052391	VARIABLE CAPACITOR
CV151	5052391	VARIABLE CAPACITOR
CV152	5052391	VARIABLE CAPACITOR
C101	0209010	CERAMIC DISC (RESISTOR SHAPE) 1000PF+-10%
C103	0208157	CERAMIC (RESISTOR SHAPE) 6.8PF+-10%(NP-0)
C105	0208161	CERAMIC (RESISTOR SHAPE) 15PF+-10%(NP-0)
C108	0208161	CERAMIC (RESISTOR SHAPE) 15PF+-10%(NP-0)
C109	0208157	CERAMIC (RESISTOR SHAPE) 6.8PF+-10%(NP-0)
C110	0208160	CERAMIC (RESISTOR SHAPE) 12PF+-5%
C111	0209027	CERAMIC (RESISTOR SHAPE) 0.015MF+-30%
C116	0208141	CERAMIC DISC (RESISTOR SHAPE) 100PF+-5%
C117	0209026	CERAMIC DISC (RESISTOR SHAPE) 0.01MF+-30%
C119	0209027	CERAMIC (RESISTOR SHAPE) 0.01MF+-30%
C154	0208124	CERAMIC (RESISTOR SHAPE) 3.3PF+-10%
C155	0208128	CERAMIC (RESISTOR SHAPE) 8.2PF+-5%
C156	0208141	CERAMIC DISC (RESISTOR SHAPE) 100PF+-5%
C160	0209010	CERAMIC DISC (RESISTOR SHAPE) 1000PF+-10%
C161	0209026	CERAMIC DISC (RESISTOR SHAPE) 0.01MF+-30%
C162	0209026	CERAMIC DISC (RESISTOR SHAPE) 0.01MF+-30%
C163	0209027	CERAMIC (RESISTOR SHAPE) 0.015MF+-30%
C164	0209027	CERAMIC (RESISTOR SHAPE) 0.015MF+-30%
C167	0208125	CERAMIC (RESISTOR SHAPE) 4.7PF+-5%
C168	0209027	CERAMIC (RESISTOR SHAPE) 0.015MF+-30%
C201	0209026	CERAMIC DISC (RESISTOR SHAPE) 0.01MF+-30%
C202	0209026	CERAMIC DISC (RESISTOR SHAPE) 0.01MF+-30%
C203	0209027	CERAMIC (RESISTOR SHAPE) 0.015MF+-30%
C204	0209026	CERAMIC DISC (RESISTOR SHAPE) 0.01MF+-30%
C206	0209026	CERAMIC DISC (RESISTOR SHAPE) 0.01MF+-30%
C207	0209026	CERAMIC DISC (RESISTOR SHAPE) 0.01MF+-30%
C208	0208138	CERAMIC DISC (RESISTOR SHAPE) 56PF+-16%
C209	0209011	CERAMIC DISC (RESISTOR SHAPE) 150PF+-10%
C210	0208133	CERAMIC DISC (RESISTOR SHAPE) 22PF+-5%
C212	0209026	CERAMIC DISC (RESISTOR SHAPE) 0.01MF+-30%
C214	0209002	CERAMIC DISC (RESISTOR SHAPE) 220PF+-16%
C218	0209027	CERAMIC (RESISTOR SHAPE) 0.015MF+-30%
C221	0209011	CERAMIC DISC (RESISTOR SHAPE) 150PF+-10%
C222	0209004	CERAMIC DISC (RESISTOR SHAPE) 330PF+-10%
C225	0209027	CERAMIC (RESISTOR SHAPE) 0.015MF+-30%
C226	0209005	CERAMIC DISC (RESISTOR SHAPE) 390PF+-10%
C227	0209005	CERAMIC DISC (RESISTOR SHAPE) 390PF+-10%
C306LR	0209025	CERAMIC DISC (RESISTOR SHAPE) 6800PF+-30%
C311LR	0209021	CERAMIC DISC (RESISTOR SHAPE) 1500PF+-30%
C401LR	0209027	CERAMIC (RESISTOR SHAPE) 0.015MF+-30%
C410LR	0209024	CERAMIC DISC (RESISTOR SHAPE) 4700PF+-30%
C413LR	0209008	CERAMIC DISC (RESISTOR SHAPE) 680PF+-10%
C422LR	0209026	CERAMIC DISC (RESISTOR SHAPE) 0.01MF+-30%
C424LR	0209010	CERAMIC DISC (RESISTOR SHAPE) 1000PF+-10%
C431LR	0209022	CERAMIC DISC (RESISTOR SHAPE) 0.0022MF+-10%
C487LR	0208135	CERAMIC DISC (RESISTOR SHAPE) 33PF+-5%
		RESISTORS
RC601	0186451	CR PACK
RC602	0186451	CR PACK
RT301	0151806	SEMI VARIABLE RESISTOR 1KOHM B
RT302	5007185	SEMI VARIABLE RESISTOR 4.7KOHM
RT401LR	5007473	SEMI VARIABLE 500KOHM
RT402LR	5007478	SEMI VARIABLE 20KOHM
RT403LR	5007482	SEMI VARIABLE 250KOHM
RT404LR	5007168	SEMI VARIABLE 100KOHM
RV401	5001041	VARIABLE RESISTOR 10KOHM(3B)
RV402	5001052	VARIABLE RESISTOR 100KOHM(C)
RV403	5001051	VARIABLE RESISTOR 100KOHM(B)
RV404	5001031	VARIABLE RESISTOR 50KOHM(5B)
RV451LR	5000934	VARIABLE RESISTOR 50KOHM(B)
		SEMI-CONDUCTORS
D101	5330573	DIODE 1S2473
D102	5330662	DIODE 1S2790TF
D103	5330573	DIODE 1S2473
D151	5331052	DIODE 1K60RLF-2
D201-206	5331052	DIODE 1K60RLF-2

SYMBOL-NO	P-NO	DESCRIPTION
		SEMI-CONDUCTORS
D401LR	5330573	DIODE 1S2473
D402LR	5330573	DIODE 1S2473
D403LR	5330573	DIODE 1S2473
D407-409	5330573	DIODE 1S2473
D412LR	5330573	DIODE 1S2473
D413LR	5331052	DIODE 1K60RLF-2
D501	5330573	DIODE 1S2473
D601	5330501	DIODE SILICON U0-5B 60HZ 3MW
D602	5331102	DIODE M4B-31-22
D651	5330001	RECTIFIER SILICON V03C 60H
D652-654	5330574	DIODE 1S2473
IC101	5351901	IC AN7213
IC201	5351064	IC AN253BB
IC301	5350684	IC BA1330
IC401LR	5352761	IC BA5104
IC402	5357001	IC TA1024
IC403	5356835	MODULE TA3003DS
IC404LR	5350962	IC DA340
IC501	5352141	IC HA1392
LED401	5380281	LED GL-9PG2
LED301	5380271	LED GL-9PR2
LED801	5380621	LED SLC-22UR
LED802	5380622	LED SLC22GG5
LED803	5380621	LED SLC-22UR
LED901	5380271	LED GL-9PR2
Q151	5321281	TRANSISTOR SILICON 2SC1675-L 230MHZ 200M
Q152	5321281	TRANSISTOR SILICON 2SC1675-L 230MHZ 200M
Q201	5321281	TRANSISTOR SILICON 2SC1675-L 230MHZ 200M
Q401LR	5322621	TRANSISTOR 2SC2320E
Q402LR	5321293	TRANSISTOR 2SC1740LN-R
Q403LR	5321293	TRANSISTOR 2SC1740LN-R
Q404LR	5321293	TRANSISTOR 2SC1740LN-R
Q405LR	5322621	TRANSISTOR 2SC2320E
Q406LR	5322621	TRANSISTOR 2SC2320E
Q407LR	5322621	TRANSISTOR 2SC2320E
Q408	5322621	TRANSISTOR 2SC2320E
Q409	5322621	TRANSISTOR 2SC2320E
Q410LR	5321293	TRANSISTOR 2SC1740LN-R
Q411LR	5322621	TRANSISTOR 2SC2320E
Q501	5320643	TRANSISTOR SILICON 2SC1162 150M
Q502	5320643	TRANSISTOR SILICON 2SC1162 150M
Q651	5320593	TRANSISTOR 2SA673C
ZD401	5330847	DIODE RD2.7E-B2
ZD501	5330531	ZENER DIODE SILICON HZ-12A 10MHZ 400MW
ZD502	5330844	ZENER DIODE RD7.5EB

SYMBOL-NO	P-NO	DESCRIPTION
		TRANSFORMERS
T101	5140071	FM IFT
T151	5160101	CERAMIC FILTER 468KHZ
T201	5148111	FM DISCRIMINATOR
T202	5148112	FM DISCRIMINATOR
T203	5140072	FM IFT
T204	5130122	AM IFT
		COILS
L101	5126482	FM RF
L102	5126278	FM OSCILLATOR COIL
L151	5123493	SWITCH ANTENNA
L152	5113501	FERRITE CORE ANTENNA
L153	5113501	FERRITE CORE ANTENNA
L154	5123494	SW OSC
L155	5120319	OSCILLATOR COIL
L156	5120465	LW OSC
L157	5123271	FM TRAP COIL 0.5MH
L401	5260861	OSCILLATOR BLOCK
L402LR	5161661	DOLBY FILTER
L403LR	5120274	CHOKE COIL
L404LR	5260215	TRAP COIL 33HH
L501LR	5150761	CHOKE COIL
		MISCELLANEOUS
	5605141	SLIDE SWITCH (BAND)
	5605151	SWITCH WIRE (BAND)
J5	5653181	DIN SOCKET
⚠	5653242	POWER SOCKET
	5653574	CONNECTOR SOCKET
	5659121	BACK COVER
J1L, R J2L, R	5673331	JACK-3.5MMD (EXT MIC/SP)
J3	5674272	JACK (HEAD PHONE)
J4L, R	5676081	2P US PIN CONNECTOR (PHONO)
BP101	5161551	FILTER
CF201	5160211	CERAMIC FILTER CF107A
CF202	5160211	CERAMIC FILTER CF107A
F301LR	5161731	LCR FILTER
⚠ F602	5720173	FUSE 500MA (BS)
⚠ F601	5721065	FUSE 3.15A
⚠ F603	5720173	FUSE 500MA
S 1	5605231	SLIDE SWITCH (BAND)
S 2	5604491	LEVER SWITCH (FUNCTION)
S 3-6	5634416	PUSH SWITCH (TAPE SELECTOR, DOLBY NR, MODE, METER)
S 7	5634166	PUSH SWITCH (REC)
S 8	5622091	SLIDE SWITCH (PLAYBACK/RECORD)
S 9, 10	5624241	SLIDE SWITCH (RIF, AFC)
S 11	5623551	SLIDE SWITCH (LINE IN/PHONO)
S 12	5633621	PUSH SWITCH (LOUDNESS)
⚠ S 18	5602022	SEESAW SWITCH (BS)

SYMBOL-NO	P-NO	DESCRIPTION
		FOR ACCESSARIES
⚠	5747321	POWER CORD (E)
⚠	5746341	POWER CORD (BS)
	5896391	FM ANTENNA (BS)
		FOR CASSETTE DECK ASSEMBLY (A)
1	6430982	PULLEY GEAR FOR AUTO STOP
2	6762743	AUTO STOP ARM
3	6430311	CAM GEAR
4	7786115	POLYESTER WASHER
5	7331667	RECORD PREVENTION SLIDER
6	6762724	FF ARM ASSEMBLY
7	6540702	SPRING
8	7757051	SPACER
9	7771441	WASHER - 2 MMD
10	7771442	WASHER-2MMD
11	6765466	HEAD PLATE
12	5449022	RECORD PLAYBACK HEAD
13	5445352	ERASE HEAD
14	7781005	SCREW FOR HEAD MOUNTING
15	8784138	BIND TAPPING SCREW-2MMDX8MM
16	7317371	EARTH PLATE
17	6321733	HEAD SPRING C
18	6546916	HEAD PLATE SPRING
19	6534245	HEAD PLATE HOLDER SPRING
20	0948492	BALL - 2MMD
21	7786172	POLYESTER WASHER
22	7331806	EJECT SLIDER
23	6546518	SPRING FOR EJECT SLIDER
24	7329781	PRESSURE ROLLER ARM ASSEMBLY
25	6546862	SPRING FOR PRESSURE ROLLER
26	7786219	POLYESTER WASHER
27	6546972	SPRING
28	6414233	TURNTABLE ASSEMBLY (TAKE UP)
29	6414021	TURNTABLE ASSEMBLY
30	6520352	BACKTENSION SPRING
31	7779864	WASHER
32	7786115	POLYESTER WASHER
33	7331676	BRAKE PLATE
34	6586007	BRAKE RUBBER
35	6546562	SPRING FOR BRAKE PLATE
36	6322501	PRESSURE RETURN SPRING
37	7331733	SWITCH SLIDER
38	7337195	AUTO STOP PREVENTION ASS
39	7337127	FF SLIDER
40	7331786	PAUSE SLIDER
41	6530925	FLYWHEEL SUPPORT SPRING
42	7339471	PLAY SLIDER
43	6765041	BALL SUPPORT
44	7331837	LOCK PLATE
45	6342222	SPRING
46	7331759	REWIND SLIDER
47	7339061	RECORD SLIDER
48	7331698	PICK UP LEVER FOR AUTO STOP
49	7787951	WASHER
50	6535111	SPRING
51	6534269	SPRING
52	6758322	ARM PIN
53	7331877	POWER ASSIST SLIDER ASSEMBLY
54	7781135	BT SCREW-3MMD
55	6765597	PAUSE LOCK ARM
56	6542021	SPRING FOR POWER ASSIST
57	6431119	POWER ASSIST GEAR
58	6430975	PAUSE GEAR
59	6762674	TAKE UP ARM ASSEMBLY
60	6546453	SPRING FOR TAKE UP ARM
61	6762644	REWIND ARM ASSEMBLY
62	6301704	SPRING
63	7333964	REWIND HOLDER
64	6373792	FLYWHEEL ASSEMBLY
65	7786623	POLY SLIDER WASHER
66	7772623	SPRING
67	6357163	FLYWHEEL BELT
68	6354531	FLYWHEEL BELT
69	6355382	BELT
70	6768891	COLLAR
71	8650905	SCREW WITH SPRING WASHER-2.6MMDX5MM
72	6762704	MOTOR HOLDER
75	7781147	BT BIND HEAD SCREW-3MMDX30MM
76	7338174	BUTTON HOLDER ASSEMBLY
77	7334764	STOP ARM ASSEMBLY
78	5576855	DC MOTOR ASSEMBLY
79	7336902	REVIEW LEVER
80	7336921	CUE LEVER
81	6766442	RECORD STOPPER
82	7552442	PIN
83	7339302	HEAD PLATE RETURN LEVER
84	7787027	POLY SLIDER WASHER
		FOR CASSETTE DECK ASSEMBLY (B)
85	6764332	CHASSIS ASSEMBLY
86	6316231	SPRING M
87	6345181	PULLEY
88	6398751	POINTER
89	6468092	SCALE PLATE (E)
90	6468093	SCALE PLATE (BS)
91	5553162	LEVEL METER
92	6767791	METER HOLDER
93	7341131	RECORD SPRING ASSEMBLY
94	5559263	COUNTER

SYMBOL-NO	P-NO	DESCRIPTION
		FOR CASSETTE DECK ASSEMBLY (B)
95	6354106	BELT
96	6546652	SPRING
97	7781134	BINDING SCREW
98	5633361	PUSH SWITCH (PLAY,PAUSE)
99	5603302	LEAF SWITCH
100	5632412	LEAF SWITCH (POWER)
101	6764342	LED HOLDER
102	6764551	LED HOLDER
		MISCELLANEOUS
103	6290832	TUNING KNOB ASSEMBLY
104	6283692	KNOB (VOLUME)
105	6283683	KNOB (BALANCE,TREBLE,BASS)
106	6296857	KNOB (FUNCTION)
107	6053105	PUSH BUTTON
108	6054611	PUSH BUTTON (LOUDNESS)
109	6283684	KNOB (RECORD)
110	6283622	KNOB (BAND)
111	7766471	SPACER
112	7711801	SPACER T
113	7731473	SPACER
114	7781148	BT SCREW-3MMDX50MM
115	6106993	FRONT CASE ASSENBLY (E)
116	6106994	FRONT CASE ASSEMBLY (BS)
117	6093441	CASSETTE LID ASSEMBLY
118	6763961	GEAR DAMPER ASSEMBLY
119	7334003	EJECT BUTTON ASSEMBLY
120	6334491	HANDLE ASSEMBLY
121	6531142	SPRING
122	5407424	SPEAKER-16CM
123	5401122	SPEAKER-5CM
124	5409111	SPEAKER-3CM
125	6767821	FUNCTION BUTTON ASSEMBLY
126	6301951	SPRING
127	5421641	BUILT IN MICROPHONE
128	6570291	MIC COVER
129	7781133	BT SCREW-3MMD
130	6107013	REAR CASE ASSEMBLY (E)
131	6107014	REAR CASE ASSEMBLY (BS)
132	6173455	BATTERY LID ASSEMBLY
133	6764801	TERMINAL HOLDER
134	7331091	BATTERY TERMINAL
135	6305961	BATTERY SPRING (+,-)
136	6305973	BATTERY SPRING
137	5752601	ROD ANTENNA
138	5687142	CAP TERMINAL
139	8744414	BIND SCREW-3MMDX14MM
⚠	140 5212444	POWER TRANSFORMER (E)
⚠	141 5212445	POWER TRANSFORMER (BS)
142	7450911	TERMINAL PIECE
143	5671661	FM ANTENNA TERMINAL
144	6746881	FUSE COVER (BS)
145	6746902	SWITCH COVER (BS)
146	6767961	VOLUME HOLDER



When ordering hardware excluding stated on these lists, be sure to make your orders with type and size.